AMENDMENTS TO THE SPECIFICATION:

Please amend the paragraph beginning at page 1, line 4, as follows:

The ~~present invention~~ disclosed technology generally relates to handover procedures in cellular communications systems, and in particular to cell-differentiated handover procedures in such systems.

Please amend the paragraph beginning at page 1, line 14, as follows:

In a Code Division Multiple Access (CDMA) communications system, a soft handover is offered to mobile user equipment, in which the mobile equipment at least temporarily is simultaneously ~~is~~ connected to multiple cells in order to allow a smooth and seamless transition between cells. Thus, in this category of handover procedures, radio links are added and abandoned in such a manner that the user equipment always keeps at least ~~on~~ one radio link to a (serving) cell in the system.

Please amend the paragraph beginning at page 2, line 5, as follows:

This handover threshold is determined by the communication system and is communicated to the user equipment. The threshold determines the resulting size of a handover region between two cells. ~~In the prior art~~ Conventionally, equal handover thresholds for all kinds of handover are employed through the system. The handover threshold will then be a compromise between two conflicting goals. Firstly, a large handover region is desired so that the user equipment travelling from one cell to another has time

to measure, report, configure and synchronize on the new cell before the link to the old serving cell has to be dropped due to insufficient signal quality. Secondly, a relative small handover region is desired from a (downlink) radio resource point of view. Thus, a too large handover region will result in that the user equipment simultaneously is connected to multiple (downlink) radio channels during a rather long period of time. This means that the user equipment will, unnecessarily, occupy radio resources that could have been better used for other applications. Thus, the handover threshold has to be carefully chosen based on these conflicting goals and in some instances a fixed handover threshold for all kinds of handover procedures will result in reduced service of quality and possibly dropped calls for the user equipment.

Please amend the paragraphs beginning at page 4, line 19 through page 8, line 11, as follows:

~~The present invention overcomes these and other drawbacks of the prior art arrangements.~~

~~It is a general object of the present invention to provide efficient handover functionality in cellular communications systems.~~

~~It is another object of the invention to provide a cell-type-differentiated handover for the cells in cellular communications systems.~~

~~Yet another object of the invention is to provide a handover procedure using triggering parameters that are adapted to the radio coverage characteristics of the cells in cellular communications systems.~~

~~These and other objects are met by the invention as defined by the accompanying patent claims.~~

Briefly, ~~the present invention~~ one of many aspects of the disclosed technology involves a cell-differentiated handover procedure in a cellular communications system. ~~According to the invention, the~~ The cells, or at least a portion thereof, of the communications system are divided or classified into multiple handover-related classes. This classification is performed based on the radio coverage characteristics of the respective cells. Each such cell class is then associated with a unique handover parameter or threshold or a unique set of multiple handover parameters. These handover parameters are then employed in different handover procedures and events used for the mobile user equipment connected to the system. The parameters will basically, at least partly, determine the geographical size and coverage of a handover region for a cell. By then employing different parameters for different cell classes, the resulting size of the handover region can be adapted for the particular characteristics of the cells.

Since the classification of cells is performed based on their radio coverage characteristics, the classification ~~will~~ may depend on an expected change in signal and link quality experienced by connected user equipment as it moves between cells. Thus, the classification preferably divides the cells into the different classes based on how the transmitted signal quality on average will change over traveled distance. For example a ~~fist~~ first cell class could include cells for which the user-measured signal quality changes abruptly and

quickly as the user equipment moves between cells. A second class could then include cells where the signal quality measured by a traveling mobile user equipment will only slowly change over distance. By employing different handover parameters for different cell classes, the handover region for each such cell class can be adapted by a suitable choice of the handover parameter values. Then the size of the handover region is preferably adapted so that it will be large enough for a travelling mobile unit to measure, report, configure and synchronize to the destination cell before the link to the old cell has to be dropped due to too low signal quality. However, the region size should not bee too large since then the user equipment will be connected to several cells during an unnecessarily, from the point of view of completing the handover procedure, long period of time and, thus, occupy communications resources that could have been better used for other purposes and users.

In one embodiment~~ of the invention~~, the cellular communications system comprises sectored sites, i.e. each base station uses a sectored antenna arrangement to provide communications services to multiple associated cells. In such a system, the radio coverage characteristics of the cells ~~will~~ can differ depending on whether the user equipment moves between cells of different sites, a so-called soft handover, or moves between cells of the same site, denoted softer handover. Since the angular antenna signal quality diagram typically drops faster per meter than the distance-dependent path loss, the user-measured signal quality will change much more rapidly when moving between cells of the same site compared to inter-site movement. As a

consequence, a first cell class could comprise cells of the same site and a second cell class then comprises cells of other sites. The handover parameter(s) associated with the first class is (are) then preferably larger than the corresponding parameter(s) of the second class to cope with and compensate for the more abrupt changes in measured signal quality for the first cell class.

A similar situation occurs in a cellular communications system with macro cells and micro or pico cells. A macro cells generally covers a large geographical area and for such a cell the signal quality, e.g. as represented by Received Signal Code Power (RSCP), ratio of energy per modulating bit to the noise spectral density (Ec/No), path loss, or some other signal quality parameter measurable or at least estimable by a mobile user equipment, will typically gradually and slowly decline as the user equipment moves away from the base station. A macro cell is often found in rural areas. However, a macro cell may also be found in urban regions where its associated antenna arrangement typically is situated above roof top in order to ~~coverage~~ cover a relative large geographical area. Such a macro cell is then typically denoted an umbrella cell in the art. However, a micro/pico cell generally covers a much smaller geographical area and the propagation conditions and radio coverage of the these cells may rapidly and abruptly change for a traveled distance. These cells are typically situated in urban regions, e.g. with associated antenna arrangements below the roof top level or in buildings. In such a case, moving around a street corner or entering/leaving a building can result in a sudden change in the experienced signal quality for the user equipment. Thus, a first

cell class ~~according to the invention~~ in this situation could include micro and pico cells and a second handover-related class then includes macro cells. The handover parameter(s) associated with the first class is (are) then preferably larger than the corresponding parameter(s) of the second class.

The handover parameters are used together with measurements of the signal quality for a communications link between the user equipment and a base station of a current best serving cell to which ~~said~~ the user equipment is connected and corresponding signal quality measurements for a communication link to a base station of a potential destination cell. A comparison between the measured signal qualities using a handover parameter associated with the cell class of the potential destination cell is then used for determining whether a handover event should be triggered. Such an event could include, adding the destination cell to the active set, i.e. connect the user equipment to this cell, remove a cell from the active set, i.e. disconnect the user equipment from the cell, replace cells in the active set or a change of the best serving cell if the user equipment currently is simultaneously connected to several cells. In these different handover events a single handover parameter of the suitable cell class could be used. Alternatively, different handover parameters are used for different events, so that the cell classes have multiple associated unique handover parameters.

The ~~invention offers~~ embodiments offer at least the following advantages:

- Enables usage of handover parameters that are adapted for the radio coverage characteristics of the individual cells in cellular communications systems;
- Reduces the risk of loosing a communications link for a mobile user equipment and, thus, of dropping an ongoing communications service or call; and [0025] Reduces unnecessary occupation of communications resources caused by too large handover regions.

~~Other~~ These and other advantages offered by the ~~present invention~~ embodiments will be appreciated upon reading of the below description of the embodiments ~~of the invention~~.

SHORT DESCRIPTION OF THE DRAWINGS

The ~~invention together with further objects~~ embodiments and their advantages thereof, may ~~best~~ be understood by making reference to the following description taken together with the accompanying drawings, in which:

Please amend the paragraphs beginning at page 8, lines 18-21, as follows:

FIG. 2 is a diagram illustrating a resulting handover region for the soft handover scenario of FIG. 1 employing a ~~prior art~~ conventional solution;

FIG. 3 is a diagram illustrating a resulting handover region for the softer handover scenario of FIG. 1 employing a ~~prior art~~ conventional solution;

Please amend the paragraphs beginning at page 8, line 27 through page 10, line 1, as follows:

FIG. 5 is a diagram illustrating a resulting handover region for the soft handover scenario of FIG. 4 employing a ~~prior art~~ conventional solution;

FIG. 6 is a diagram illustrating a resulting handover region for the softer handover scenario of FIG. 4 employing a ~~prior art~~ conventional solution;

FIG. 7 is a schematic overview of a portion of a sectored cellular communications system according to an embodiment of the present invention;

FIG. 8 is a diagram illustrating a resulting handover region for the soft handover scenario of FIG. 4 employing ~~the~~ example teachings of the present invention;

FIG. 9 is a diagram illustrating a resulting handover region for the softer handover scenario of FIG. 4 employing ~~the~~ example teachings of the present invention;

FIG. 10 is a schematic overview of a portion of a cellular communications system with macro and micro cells according to an embodiment of the present invention;

FIG. 11 is a flow diagram of ~~a~~ an example handover parameter assigning method according to an aspect of the present invention;

FIG. 12 is a flow diagram of an ~~embodiment of a~~ example method of modifying a list of potential handover cells according to an aspect of the present invention;

FIG. 13 is flow diagram illustrating example additional steps of the handover list modifying method of FIG. 12;

FIG. 14 is a flow diagram illustrating an example of the comparing step of FIG. 13 in more detail;

FIG. 15 is a flow diagram of another ~~embodiment of a~~ example method of triggering a handover-related procedure according to an aspect of the present invention;

FIG. 16 is a schematic block diagram of a radio network controller according to an embodiment of the present invention;

FIG. 17 is a schematic block diagram of a user equipment according to an embodiment of the present invention; and

FIG. 18 is a schematic block diagram of ~~a~~ an example handover requester of the user equipment of FIG. 17.

Please amend the paragraphs beginning at page 10, line 8 through page 12, line 1, as follows:

~~The present invention~~ One or more aspects of the disclosure generally ~~relates~~ relate to handover in cellular communications systems and particularly to a cell-differentiated handover in such systems.

In ~~the present invention~~ one aspect, cells of a cellular communications system are divided or classified into multiple, i.e. at least two, handover-related classes or sets. This division of cells ~~according to the invention is~~ can be performed based on the radio coverage characteristics or properties of the cells.

The different cell classes are then associated with a respective unique handover parameter or a unique set of multiple handover parameters that will be used in handover procedures for user equipment or other mobile units connected to the system. These parameters or thresholds are typically employed in different handover triggering conditions or events and basically ~~will~~ can, at least partly, determine the geographical size and coverage of a handover region for a cell. By then employing different parameters for different classes, the resulting size of the handover region can be adapted for the particular characteristics of the cells.

In the ~~present invention~~ description, the expression "cell" refers to a certain geographical area that provides communications services by ~~means of~~ communications resources to user equipment present in the area and connected to the cell. The cell is typically associated with a base station or similar antenna-comprising arrangement for providing the (radio) resources. The geographical size of the cell is determined by the radio propagation conditions and normally decline in signal and link quality as one moves away from the base station. Thus, within the cell area, the radio coverage is typically good enough to enable the communication between the user equipment and the base station. However, as one approaches and passes the borders of a cell the signal quality ~~will~~ can be too low to perform the communications service.

A cell ~~according to the invention~~ may cover a relative large geographical area, typically denoted macro cell in the art, if its associated base station is able to provide a communications link to user equipment with a high enough

quality over a large area. These macro cells could typically be found in rural areas, where the expected traffic situation will be low and the probability that several users simultaneously are present in and connected to a same cell is relative low. However, a macro cell may also be found in more user-dense urban regions where its associated antenna arrangement typically is situated above roof top in order to ~~coverage~~ cover a relative large geographical area. Such a macro cell is then typically denoted an umbrella cell in the art. Correspondingly, a cell could cover a relative small geographical area, generally denoted micro or pico cell in the art. Such cells are typically situated in dense urban regions, where the probability that many users simultaneously are present in a same area is relative high. In these user-dense urban regions, the antenna arrangement of a micro or pico cell is typically provided below the roof top level or in buildings.

A cell ~~according to the present invention~~ could also be a sub-area of a larger base station- or antenna-associated area. For example, the radio coverage area of a base station can be divided into multiple sectors or cells. Such cells (sectors) within one site or area are typically served by the same base station having a X-sectored antenna, where X is the number of cells in the site, e.g. 3, 6 or 12. A radio link within a cell can then be identified by a single logical identification belonging to that cell. Thus, also such a sector ~~is~~ can be a cell ~~according to the present invention~~.

In order to provide a seamless crossing between ~~cell~~ cells, the radio coverage areas of two neighboring cells typically at least partly overlap~~, which is well known to the person skilled in the art~~.

As ~~was~~ mentioned above, the classification of cells ~~is~~ may be performed based on the radio coverage characteristics of respective cells. Such a classification ~~will~~ can then depend on an expected change in signal and link quality experienced by connected user equipment as it moves between cells. For example, in rural areas with macro cells, the signal quality, e.g. as represented by Received Signal Code Power (RSCP), ratio of energy per modulating bit to the noise spectral density (Ec/No), path loss, or some other signal quality parameter measurable or at least estimable by a mobile user equipment, will typically gradually and slowly decline as the user equipment moves away from the base station. However, in a dense urban area with micro/pico cells, the corresponding signal quality may change rapidly and abruptly. For example, moving around a street corner or entering/leaving a building can result in a sudden change in the experienced signal quality for the user equipment.

Please amend the paragraph beginning at page 12, line 19, as follows:

In order to facilitate understanding of one or more aspects of the present invention, the problems associated with ~~prior art~~ conventional techniques using fixed and identical handover parameters for all cells are surveyed with reference to FIGS. 1 to 6.

Please amend the paragraph beginning at page 14, line 4, as follows:

The corresponding diagram over signal quality change when the user equipment performs an angular movement from cell 10 into the cell 20 of the same site is illustrated in FIG. 3. However, since the angular antenna diagram typically drops faster per meter than the distance-dependent path loss (FIG. 2), the measured signal qualities will change (drop for cell 10, unbroken line, and increase for cell 20, broken line) more rapidly compared to the situation in FIG. 2. Employing the same threshold T as for the inter-site handover in FIG. 2 according to ~~prior art~~ conventional techniques will then result in a considerably smaller handover region. In other words, the time for performing a handover procedure for the user equipment passing the region will be much shorter. In the art, FIG. 2 generally illustrates the situation for a soft (inter-site) handover procedure whereas FIG. 3 relates to a softer (intra-site) handover procedure.

Please amend the paragraph beginning at page 15, line 7, as follows:

~~The~~ A problem is then how to determine a suitable value for the handover threshold T. Assume that the threshold T is determined and adapted for soft (inter-site) handover so that the user equipment will have time enough to measure, report, configure and synchronize to the new cell 40 before the link to the old cell 10 has to be dropped due to too low signal quality. However, then the resulting handover region for the softer (intra-site) handover will be too small using this inter-site-adapted threshold value. As a consequence the user equipment may not have time to complete the handover procedure when

travelling towards the new cell 20 and the link to the old cell 10 might be lost, resulting in a drop of an ongoing call.

Please amend the paragraph beginning at page 15, line 27 through page 18, line 6, as follows:

~~However, these problems with prior art techniques are solved by the present invention~~ In one or more embodiments, this and other problems are addressed by classifying cells into different handover-related classes and then employing different handover parameters for the different classes, where the parameters have been adapted to the radio coverage characteristics of their associated cell class.

FIG. 7 is a schematic overview of a portion of a cellular communications system 1, to which ~~the teachings~~ one or more embodiments of the present invention can be applied. This system 1 comprises sectored sites 80, 90, exemplified with six cells 10-30, 40 per site 80, 90. A first base station 85 or Node B manages six associated cells including cells 10-30, ~~of~~ which ~~only three~~ have been provided with reference signs in order to simplify the illustration. In one of these cells 10, a mobile unit or user equipment 200 is present and conducts communication with the base station 85. The system 1 also comprises a second site 90 with a base station 95 having six associated cells including cell 40. The base stations 85, 95 are further in connection with a control node, Base Statio Controller (BSC) or Radio Network Controller (RNC) 100. This control node 100 supervises and coordinates various activities of the

plural base stations 85, 95 connected thereto and typically participates in any handover procedures for the user equipment 200.

In a first embodiment~~ of the invention~~, the cells are classified into a first handover-related class that comprises cells 20, 30 of a same site 80 as the best serving cell 10, to which the user equipment 200 presently is connected and a second class that comprises cells 40 of other sites 90. The first class is then associated with a first handover parameter or a first set of multiple handover parameters and a different second parameter or parameter set is used for the second class. In a preferred embodiment~~ of the invention~~, the handover parameter(s) of the first class is (are) larger than the corresponding parameter(s) of the second cell class. As a result, the handover region when moving into a cell 20, 30 of the same site 80 can then be in the same order of size as the handover region for inter-site handover, e.g. from the cell 10 to the cell 40. Thus, the available action time for performing a handover procedure when passing the region will be in the same order of size.

FIGS. 8 and 9 illustrate signal quality diagrams for the 6-sector site illustrated in FIG. 4 when employing the present invention. With reference to both FIGS. 4 and 8, the resulting average signal quality measured by the user equipment on a link to the source cell 10 is illustrated in FIG. 8 as an unbroken line whereas the signal quality for a link to the destination cell 40 is represented by unbroken line for the inter-site handover. For this class of destination cell, i.e. cell of other sites, a first handover parameter or threshold T.sub.1 is used for determining when a handover procedure or event is to be

triggered and, thus, affects the size of the handover region. In contrast, in FIG. 9 the intra-site handover from the source cell 10 to the destination cell 20 is illustrated. Since in this case the destination cell 20 belongs to the same site as the source cell 10, a second handover parameter T.sub.2 is used in the handover procedure. By employing a larger parameter T.sub.2 for intra-site handover than for inter-site handover, the handover regions for the two scenarios may be in the same order of size. The user equipment will then have time enough to be able to complete the handover procedure before the link to the source cell 10 will drop due to insufficient signal quality and radio coverage for both types of handover. FIGS. 8 and 9 that employ the teachings of the invention should be compared to the corresponding FIGS. 5 and 6 ~~according prior art~~ conventional techniques. Thus, by using the ~~invention~~ classification of cells it is possible to obtain large enough handover regions for all types of cells without the drawbacks that other cell types will have unnecessarily large or too small handover regions.

Returning briefly to FIG. 7, in another embodiment ~~of the invention~~ a first handover-related class includes only neighboring cells 20, 30 of the same site 80 as the current source cell 10. The second cell class then comprises non-neighboring cells of the same site 80 (illustrated with broken lines in the site 80) and cells 40 of other sites 90. The handover parameter(s) of the first class is (are) then preferably larger than the corresponding parameter(s) of the second class in order to compensate for the more rapidly changing radio coverage

(signal quality) when moving between neighboring cells of the same site compared to other cells.

In yet another embodiment~~ of the invention~~, a first handover-related class or cell group comprises high-sectored cells, i.e. cells belonging to a site that comprises many cells, e.g. sites comprising more than three cells. A second cell class could then include low-sectored cells, e.g. cells belonging to a site with three or less associated cells, and non-sectored cells. Similarly to above, the parameter(s) or threshold(s) used in handover procedures for the first class is (are) preferably larger than the parameter(s) for the second class.

FIG. 10 illustrates another example of a portion of a cellular communications system 1, to which the embodiment(s) of the present invention can be applied. This system 1 comprises cells including cells 50, 60, 70 with different sizes of their respective radio coverage areas. As was briefly discussed above, each cell 50-70 is associated and managed by a respective base station 55, 65, 75 that provides communications services to connected mobile user equipment 200. The base stations 55, 65, 75 are further in connection with a control node or RNC 100, as in FIG. 7.

Please amend the paragraphs beginning at page 19, lines 4-14, as follows:

However, when moving between micro cells 70, the radio coverage can abruptly drop or change over just a small traveled distance. If a same handover parameter as for macro cells 50, 60 was to be used, a call or another ongoing

communications service may have to be dropped or lost before the handover procedure is completed due to the sudden change in radio coverage. ~~The~~ One solution is then to employ different handover parameter(s), typically larger parameters, than for the macro cell case. The user equipment 200 will then be able to complete the handover procedure before the connection to the source cell is lost.

Thus, in this embodiment ~~of the invention~~, a first handover-related class 15 comprises micro and pico cells 70 with a small geographical area and a second class comprises macro 50, 60 with a large geographical area. The parameter(s) for the first class is (are) then preferably set larger than the parameter(s) for the second class.

Please amend the paragraph beginning at page 19, line 30 through page 21, line 21, as follows:

Furthermore, cells, in which the user-experienced signal quality varies much over time at a certain geographical distance, typically near the cell ~~boarder~~border, from the associated base station, could be classified into a first handover-related class ~~according to the invention~~. A second class could then include cells where the signal quality on average does not change much over time. Then the handover parameter(s) for the first class is (are) preferably larger than for the second class.

The division of cells into multiple handover-related classes based on their respective radio coverage characteristics and usage of different handover

parameters for the classes ~~according to the present invention~~ can also be applied to cellular communications system, such as Global System for Mobile communications (GSM) and Digital-Advanced Mobile Phone System (D-AMPS), employing hard handover procedures and/or inter-frequency or inter-carrier handover. Unlike soft and softer handover that provides a seamless handover where communications links are added and abandoned in such a manner that the user equipment always keeps at least one radio link to a base station, hard handover is a category of handover procedures where all "old" radio links in the user equipment are abandoned before the "new" links are established. Typically, the main objective with handover parameters in mobile-assisted measurements of link quality for the purpose of hard handover is to avoid ping-pong effects between cells. The risk for ping-pong handovers decreases with an increased risk of dropping the connection to the communications system. Ping-pong between cells of a same site is not as critical as ping-pong between different base stations, i.e. cells of different sites. As a consequence cells could then be classified into sectored cells (class 1) and non-sectored cells (class 2) or, alternatively, into high-sectored cells (class 1), e.g. more than three cells per site, and low-sectored, e.g. less or equal to three cells per site, and non-sectored cells (class 2). Different handover parameters and offsets are then employed for the two classes, preferably by using a lower ping-pong offset for cells of the first class than for cells of the second class.

Thus, ~~the present invention~~ one or more embodiments of the disclosed technology can typically be applied to different types of communications

systems including a GSM system, different CDMA systems, a Time Division Multiple Access (TDMA) system, a Frequency Division Multiple Access (FMDA) system or any other systems utilizing whatsoever multiple access method, e.g. a Orthogonal Frequency Division Multiple Access (OFDMA) system.

Although the ~~present invention~~ description hitherto mainly has been described with reference to classifying cells into two different handover-related classes, this teaching can be applied also for more than two classes. For example, a first handover-related class could include high-sectored cells, e.g. the cells of a site having more than three associated cells, a second class comprises low-sectored cells, the cells of a site with three or less cells, and a third class includes non-sectored cells. If the handover parameter for the first class is denoted T_1 and the parameters for the other two classes are T_2 and T_3, respectively, these parameter values are preferably determined so that $T_1>T_2>T_3$. Also a combined classification of cells into micro/macro cells and into cells of the same site/other sites could be employed. For example, class 1 comprises micro/pico cells of the same site, class 2 comprises micro/pico cells of other sites and class 3 and 4 represent macro cells of the same site and of other sites, respectively. Then the handover parameters for the different classes could be determined so that $T_1>T_2>T_3>T_4$, if the subscripts represent the above-mentioned class numbers.

The classification of cells into multiple handover-related classes ~~according to the invention is typically~~ can be performed during the cell planning or deployment phase for a communications system. The division of

cells could then be performed manually by a network operator, e.g. determining that cells of a same site should have a first associated handover parameter and that cells of other sites should use a second different parameter. However, different radio coverage and propagation prediction algorithms and tools could alternatively or in addition be employed for estimating radio coverage characteristics of cells and defining a suitable division of the cells in the system based on this estimation. This updating of cell classification ~~according to the invention~~ could be automatically performed in order to optimize the selection of classes and/or handover parameters.

Please amend the paragraphs beginning at page 24, lines 9-14, as follows:

Thus, the handover-related classes ~~according to the present invention~~ could each be associated with a unique handover parameter or a unique set of multiple handover parameters, e.g. employed in the different handover events discussed above.

FIG. 11 is a flow diagram illustrating ~~a~~ an example method of assigning handover parameters for a cell in a cellular communications system ~~according to the present invention~~. The method starts in step S1, where the cells in the system, or at least a portion of the cells, are classified and divided into multiple handover-related classes based on the radio coverage characteristics of the cells. Each such cell class then preferably includes multiple cells. This classification is typically performed during the deployment and cell planning

phase of system management. The classification can be fixed and is subsequently continuously used in the system, or could be periodically or intermittently updated.

Please amend the paragraph beginning at page 26, line 7, as follows:

FIG. 13 is a flow diagram illustrating additional steps of the method of FIG. 12. The method continues from the step S11. In a next step S20, the user equipment compares signal qualities for the destination cell and the best serving cell using the received handover parameter(s). Based on this comparison, the user equipment transmits a list update request to the RNC in step S21. This request could state that the user equipment would like to add the destination cell to the active cell list, remove the cell therefrom or some other handover-related triggering procedure. The RNC then processes the request by e.g. investigating if there is a communication link available in the destination cell, contacting the base station of the destination cell, etc.~~, which is well known to the person skilled in the art~~. The RNC generates a list update command and transmits it to the user equipment. Thus, in a next step S22, the user equipment receives the update command. The method then continues to the step S12 of FIG. 12, where the user equipment modifies or updates its associated handover list based on the received command.

Please amend the paragraphs beginning at page 27, line 7 through page 28, line 8, as follows:

The signal quality data used in the comparison of FIG. 14 could be the measured and preferably filtered signal quality data, e.g. RSCP, ~~EcNo~~ Ec/No, for the communications links of the two cells. In an alternative embodiment, the comparison data is calculated based on the measured raw-data possibly using other input data such as transmitted signal power of the links, on which the user equipment performs the signal quality measurements. Such additional data can then be received from the base station of the respective cells. A typical example of such a signal quality parameter is path loss that basically is determinable based on the transmitted (pilot) signal power and measured signal power (RSCP).

FIG. 15 is a flow diagram illustrating ~~a~~ an example method of triggering a handover-related procedure for the user equipment ~~according to the present invention~~. In a first step S40, the cells of the communications system are classified into multiple handover-related classes. This step basically corresponds to the step S1 of FIG. 11 and is not further discussed. In a next step S41, the handover parameters are assigned to the determined cell classes. In this step S41, one or several unique parameters are assigned for each class in such a manner that classes where the radio coverage characteristics of their associated cells changes rapidly preferably have access to larger parameters compared to classes with slowly distance-dependently changing radio coverage. In a next step S42, the control unit or RNC receives a handover triggering

request from the user equipment. Such a request is generated based on a comparison between signal quality measurements and handover parameters and preferably includes an identifier of the actual cell. The RNC then investigates whether it is possible to execute the requested handover procedure stated in the request by e.g. determining if there is an available communications link for the user equipment in the cell. If the requested handover procedure can be conducted, a handover triggering command is generated and transmitted to the user equipment in step S43. This triggering command allows the user equipment to perform the requested handover procedure, e.g. by updating its associated active cell list. The method then ends.

FIG. 16 is a schematic block diagram of ~~a~~ an example control unit 100 that manages handover procedures in a cellular communications system. In the figure, the control unit is represented by a RNC 100.

Please amend the paragraph beginning at page 29, line 6, as follows:

The RNC 100 can also have access to a parameter assigner 160 that assigns one or multiple handover-related parameters or thresholds for the cell classes defined by the cell classifier 120. These parameters are then stored in the database 150. The actual values of the different parameters can be determined based on data measured or estimated from some other unit in the RNC 100 or an external unit.

Please amend the paragraph beginning at page 30, line 15, as follows:

FIG. 17 is a schematic block diagram of an example mobile user equipment 200~~according to the present invention~~. The user equipment 200 comprises an I/O unit 210 for conducting communication with external units, including base stations in the cellular communications system. A signal quality measurer 220 is provided in the unit 200 for determining or estimating signal quality data for communications links, e.g. PCCH, BCCH, from base stations. Typical such quality data includes, but is not limited to, RSCP, ~~EcNo~~ Ec/No and path loss. The measurer 220 could be configured for continuously, intermittently or upon an event, e.g. reception of a measurement control message from the RNC, measure the signal quality on a pre-selected amount of communications links. The user equipment 200 preferably receives information of scrambling code, carrier information, cell identifiers or other data needed for performing the measurements from the RNC, the base stations or some other network node unit.

Please amend the paragraph beginning at page 32, line 6, as follows:

The user equipment ~~according to the invention~~ is preferably able to support different measurement reporting criteria as defined in the 3GG document [6]. Different measurement identities can then be set up in the user equipment for cells of different handover-related classes. According to the document [6], the user equipment should support up to eight events for all measurement identities for intra-frequency measurements. Moreover, the total

number of events for intra-frequency, inter-frequency and inter-RAT (Radio Access Technology) measurements together is limited by 18. In such a case, it is possible to utilize separate measurement control messages with different measurement identities for different cell classes. However, the present invention can also be applied to user equipment that can only handle one measurement identity since the RNC can then assign measurement control parameters based on the cell classification.